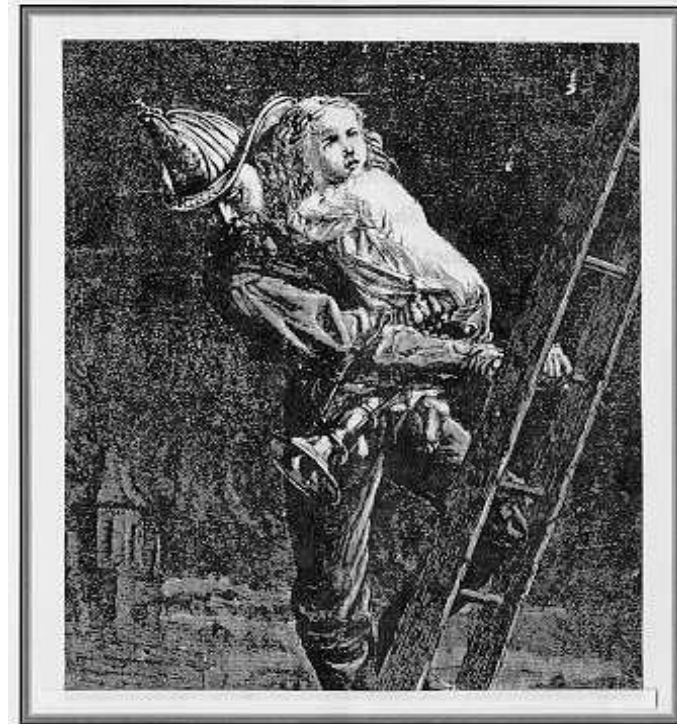


# InterAgency Board (IAB) for Equipment Standardization and Interoperability

**The 2<sup>nd</sup> Annual National Symposium on  
Terrorism Preparedness and Response  
10-12 June 2002  
Los Angeles, California**

**Representing the  
PP&OE Subgroup**

**Battalion Chief Ron Watson  
Los Angeles Country FD  
&  
Bill Haskell  
US Army SBCCOM  
Natick Soldier Center  
National Protection Center**



***A Safer Rescuer  
Means a Safer America !***



## **PP&OE Subgroup Membership – FY02**

**Armando Bevelacqua**

**Bill Chandler**

**Wayne Davis**

**Richard Duffy**

**Bill Haskell**

**Glenn Jirka**

**Gail Kulisch**

**Peter LaPorte**

**Scott Larson**

**Jeff Marcus**

**Phil Mattson**

**Ronald Olin**

**Richard Reddy**

**Irene Richardson**

**John Stedman**

**Jeff Stull**

**Bruce Teele**

**Ron Watson**

**Doug Wolfe**

**Plus the Support of Many Subject Matter Experts!!**

**John Dower**

**Orlando Fire Department**

**Hennepin County Sheriff's Office**

**SBCCOM PM-NBC Defense**

**International Association of Fire Fighter**

**US Army National Protection Center (Federal Co-Chair)**

**University of Missouri, Fire & Rescue Training Institute**

**U.S. Coast Guard, Commander Atlantic Strike Team**

**D.C. Emergency Management Agency & NEMA**

**Minneapolis Police Bomb Squad & NBSCAB**

**Los Angeles Fire Department**

**NIST – Office for Law Enforcement Standards**

**Lawrence Kansas Police Department**

**Boise Fire Department**

**Army Center for Health Promotion and Preventative Medicine**

**NIJ Border Research & Technology Center**

**International Personnel Protection**

**National Fire Protection Association**

**Los Angeles County Fire Department (Co-Chair)**

**Sarasota County Fire Department**

**NIOSH-NPPTL**



## **Subgroup Performance Criteria & Standards Priorities:**

### **No. 1 Respiratory Protective Equipment**

- ✓ **Fire Fighter Self Contained Breathing Apparatus (SCBA) Jan 02**
- **Air Purifying Respirators (PAPR's, Negative Pressure Masks)**
- **Escape Type Hood & Masks (Will address priority & importance!)**
- **Selection and Use Guidelines – NIOSH**

### **No. 2 Protective Ensembles & Accessories**

- ✓ **NFPA 1994 Standard on Protective Ensembles for Chemical of Biological Terrorism Incidents, 2001 Edition**

**Revisit 1994 to Better address Law Enforcement & Special Operations**

- **Bomb Technician Protective Ensemble Performance Standard**
- **Enhanced Urban Search & Rescue Protective Ensemble**



# InterAgency Board for Equipment Standardization and Interoperability

## Subgroup Escape Mask Design, Use & Performance Criteria Objectives:

- 21 March 2002 Escape Hood Advisory Committee
- TSWG Escape Mask Test & Evaluation Program
- SBCCOM Edgewood – Test and Evaluation Protocol

*The PP&OE Subgroup Feels Escape Type Respiratory Protective Equipment is an Equal Priority to Air Purifying Respirators (APR)*

*Recommendation – Additional Federal Resources to Conduct Escape Mask Standard Concurrent with Air Purifying Respirator Standard!!!*

Concept of Use: Escape Mask/Hood products should only be used for escape from a contaminated area, and not used for entry and rescue operations

Subgroup Split Issue: Only used for Chem/Bio threats and not for protection against combustion by-products and smoke!!

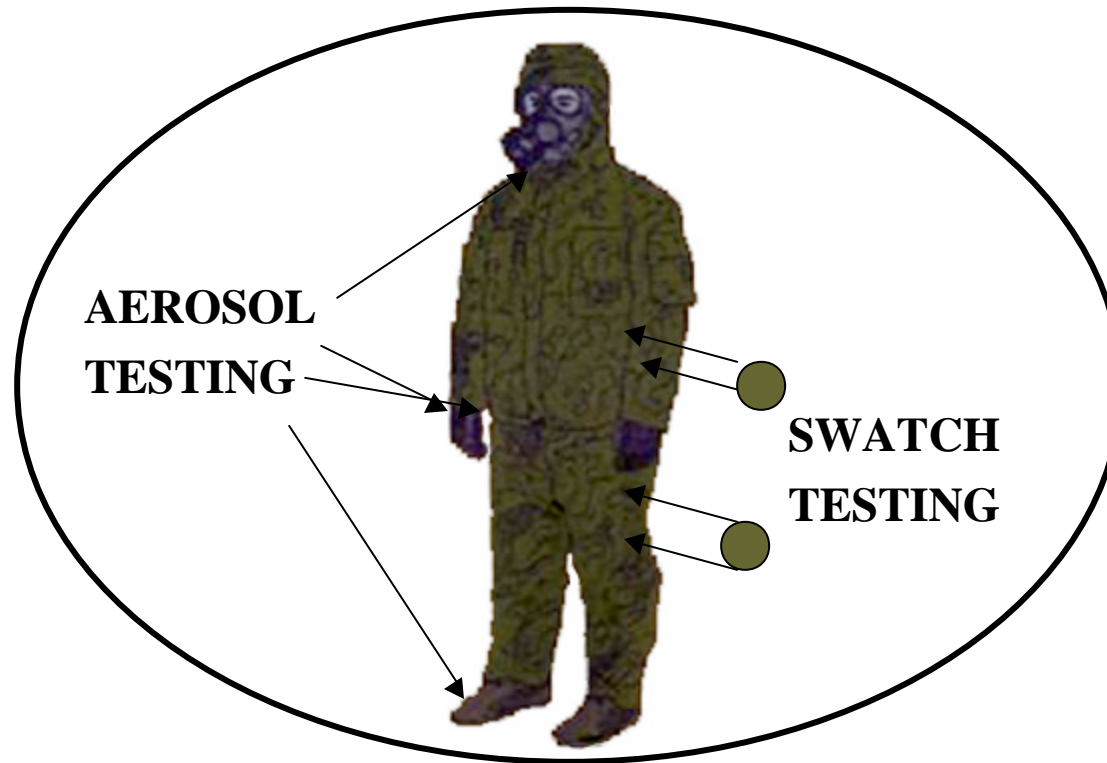


# **InterAgency Board for Equipment Standardization and Interoperability**

## **Subgroup Escape Mask Design, Use & Performance Criteria Objectives**

- **Inhalation & Exhalation Breathing Resistance:**
  - Current accepted constant and peak air flows (liters/min) are inadequate
  - Negative effect on human performance and fatigue during high work loads
- **Easy to Don – Criteria needs to be established**
- **One Size Fits All –**
- **Training Procedures & Minimum Training Time – Design Specific**
- **Reflective Material – Not required**
- **Reuse – One time use only, then dispose**
- **Gross Liquid Protection – Test is needed**
- **Operational Temperature Limits – Split on high temperature use in fires**
- **Long Term Storage Temperatures – Need to be determined**
- **Field of View, Distortion & Fogging –**
- **Communications Capabilities –**
- **Maintenance – Not required**
- **Cost of Product - \$100 to \$150 range maximum (but lower the better!)**
- **Thermal Stability – Resist shrinkage and not support combustion!**
- **Size of Packaging – Small as possible, practical to wear on belt**





**MIST TESTING**

**Challenge – Materials & Systems Performance Tests**



## **National Fire Protection Association (NFPA) IAB Committee Participation**

- **Technical Correlating Committee on Fire and Emergency Services Protective Clothing and Equipment (FACCE-ACC)**



**Chair: Mr. Richard Duffy, Special Assistant to the General President, IAFF**

- **Technical Committee on Hazardous Materials Protective Clothing and Equipment (FAE-HAZ)**

**Chair: Bryan Heirston, Oklahoma City Fire Department, Rep. IAFF**

**NFPA 1991, 1992 and 1994 Standard for Protective Ensembles for Chemical or Biological Terrorism Incidents, 2001 Edition (Three Levels of Protection)**



# **InterAgency Board for Equipment Standardization and Interoperability**

## **Standards Development for Protective Garment and Accessories**

### **PP&OE Subgroup & NFPA Interactions:**

#### **NFPA 1994 Standard on Protective Ensembles for Chemical or Biological Terrorism Incidents, 2001 Edition**

##### **Issues for Consideration:**

**Revise Law Enforcement and Special Operation  
User Requirements**

**Consideration of Biological Threat Only Protective  
Ensemble Criteria**

**Note: NFPA 1994 Open for Public Comment 30 June 02**





## BDO VS JSLIST

### BDO

24

Chemical Protection (hours)

22 (30)\*

Wear Life (days)

\*At Commander discretion

30 max

Service Life (days)

No

Launderable

6.5

Weight, size medium (lbs)

Separate (butyl)

Hood

8

(same size coat and trousers)

Size

14 years

Shelf Life (years)

### JSLIST

24

45

120 out of pkg

6 Times

5.6

Integral (part of coat)

7

(coat and trousers sized separately)

5 years (currently\*\*)

\*\*Could exceed 15 years)



# InterAgency Board for Equipment Standardization and Interoperability

## Battle Dress Overgarment (BDO) VS Joint Service Lightweight Integrated Suit Technology (JSLIST)



BDO

- Bulky, cumbersome
- Carbon rubs off inside suit

Outer shell = 50/50 nylon/cotton twill with durable water repellant finish.

Liner layer = charcoal impregnated polyurethane foam/nylon tricot laminate that absorbs chemical agents.



JSLIST

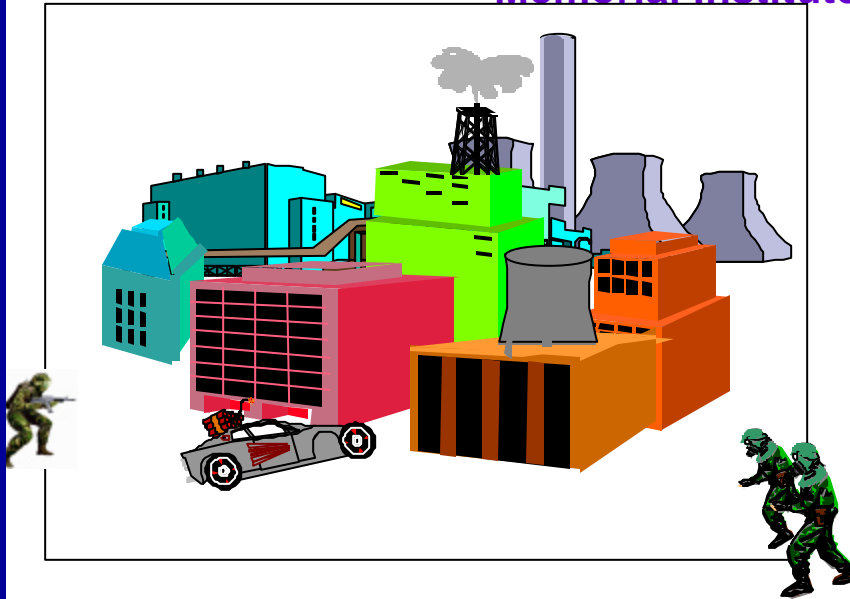
- 15% lighter and less bulky
- Lower heat stress
- More comfortable
  - Improved design
  - No carbon rub-off
- Better fit - separate coat/trouser sizing

Outer shell = 50/50 nylon/cotton poplin with durable water repellant finish.

Liner layer that absorbs chemical agents = a non-woven fabric front, laminated to activated carbon spheres and bonded to a tricot knit back.



**Joint Science Technology Panel of Chemical and Biological Defense  
Individual Protection Business Area  
&  
Memorial Institute for the Prevention of Terrorism (MIPT)**



**CIP2004: Military Type Chemical  
Protective Clothing Effectiveness  
Against Toxic Industrial Chemicals**

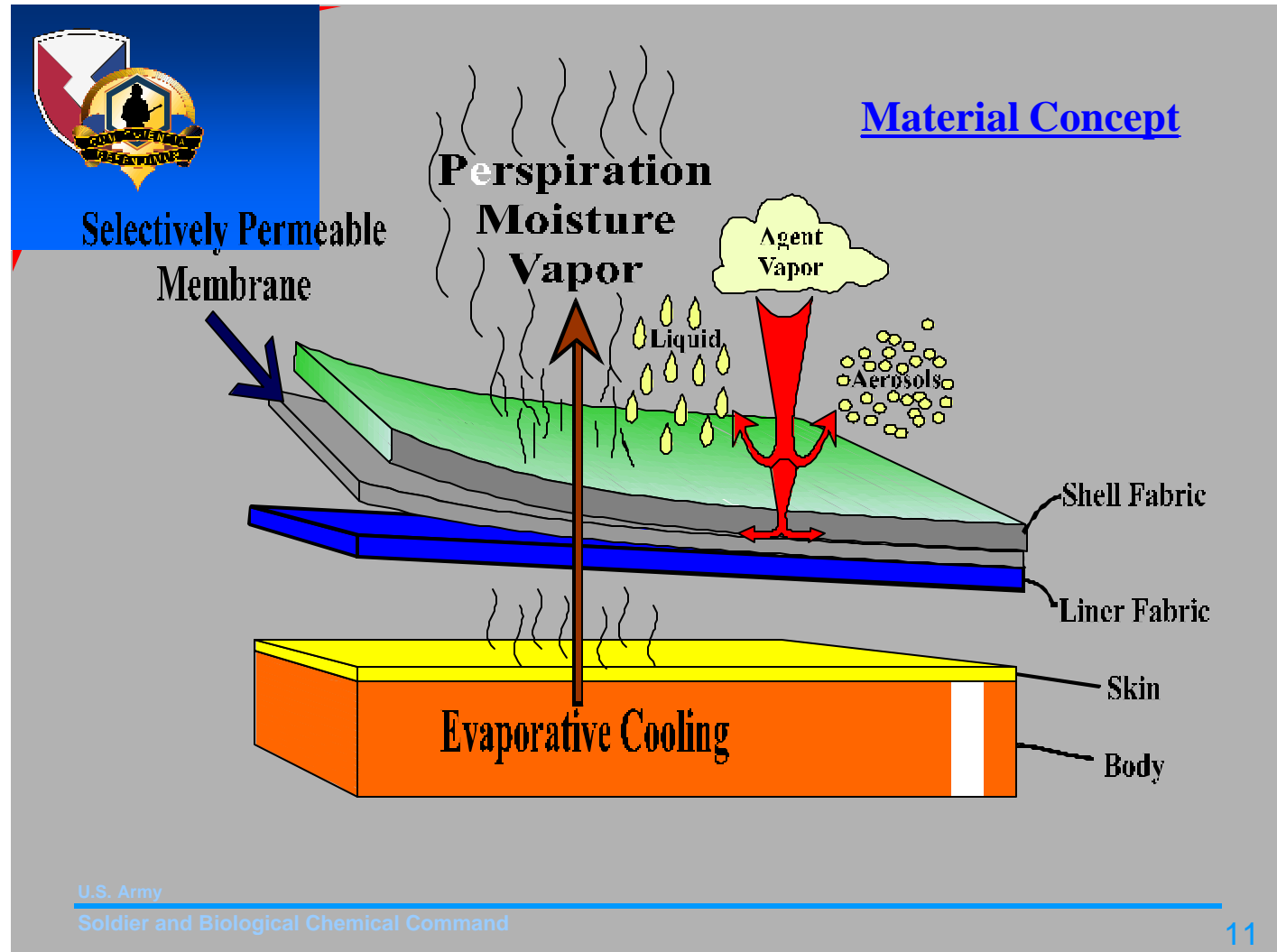
**Elizabeth Klemperer, SBCCOM**

**508-233-4948**

- **Determine protection that uniforms designed to protect against chemical warfare agents can give against exposure to toxic industrial chemicals (TIC).**
- **For planning of operations against urban terrorism and military operations near industrial sites.**



# InterAgency Board for Equipment Standardization and Interoperability



## Next Generation Chem/Bio Protective Clothing System

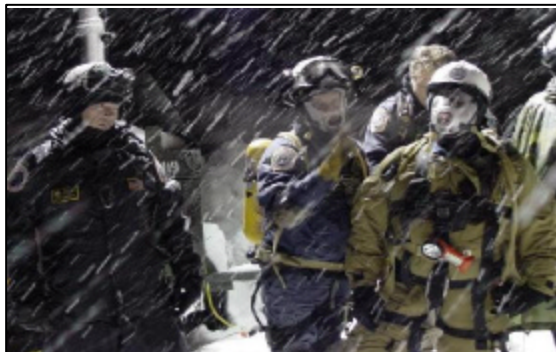


# Selectively Permeable Garment Technology

**Field evaluation &  
design feedback**



➤ **Field evaluations include:**



- **FEMA US&R team (Region 1 – Feb 01, Mar 02)**
- **Boston Fire & Emergency Medical Service**
- **Oklahoma City Emergency Management Agency (Bomb Techs, Hazmat, EMS)**
- **Colorado Springs PD SWAT team**
- **National Guard Civilian Support Teams (CST)**
- **LA County sheriffs Department**
- **U.S. Army & Marine Corps**

**NIST, NIJ & MIPT Funding support in FY01 & 02 to tackle performance test and evaluation for chem/bio warfare and toxic industrial chemical threats**



# Where we are going with SPM Technologies?



DUST and 

2002 (Enhanced SPM)

WMD Civil Response

2003 (TIC Resistant SPM)



Land Warrior [JSLIST]

2004

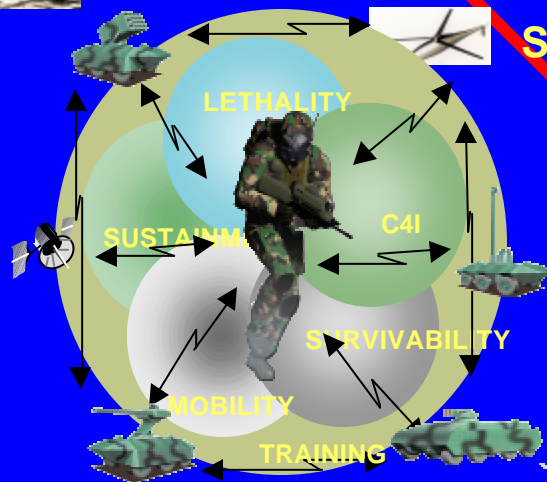


Scorpion (SPM-Based Combat Systems)

2010

Objective Force (Self-Decon, Active  
SPM-Based Future Combat Systems)

2015-2020



Future Warrior

2025





# InterAgency Board for Equipment Standardization and Interoperability

## Law Enforcement & Corrections Tactical Uniform Systems Product Development Team

*One piece coverall style  
uniform with water  
resistant, flame resistant  
fabric and easy don/doff  
closure system*

Ballistic Helmet with comms  
and riot control - protective  
accessories

Load bearing vest with  
integrated level A ballistic  
protection

Thigh pocket for  
pepper spray  
canister

Tactical anti-slip boots for  
comfort, blunt trauma and toe  
protection



Slanted easy  
in/out sleeve  
pockets with unit  
patch attachment  
point

Protective  
integrated padding  
in knees and  
elbows

Chem Undergarment or  
Selectively Permeable  
Membrane (SPM)



# InterAgency Board for Equipment Standardization and Interoperability



## Technical Committee on Electronic Safety Equipment for Fire & Emergency Services

*This committee shall have the primary responsibility for requirements and documents for the design, performance, testing, and certification of electronic safety equipment used by fire and emergency services personnel during emergency incident operations, and shall also have primary responsibility for documents on the selection, care, and maintenance of electronic safety equipment.*

### Technologies for Exploration

- Personal tracking and accountability
- Personal alarm/alert notification
- Visibility enhancement
- Personnel physiological monitoring
- Hazardous environment monitoring
- Thermal imaging
- Personnel/victim locators
- Inter-personnel communications

### Performance Criteria

- ❖ Thermal stability
- ❖ Power/energy sources
- ❖ Particulate, shock, vibration resistance
- ❖ Intrinsic safety
- ❖ RF interference
- ❖ Heat and flame resistance
- ❖ Equipment integration and interface
- ❖ Water/liquids resistance





# InterAgency Board for Equipment Standardization and Interoperability

## Subgroup Priority – Performance Criteria and Certification Standard For Law Enforcement & Emergency Responder Bombs Suits



**Provides full body protection from high speed fragments, blast overpressure, heat/flame and tertiary effects of Unexploded Ordnance and Improvised Explosive Devices and Protection for Chem/Bio Threats**

### Leverage Military Advance Bomb Suit (ABS) ORD

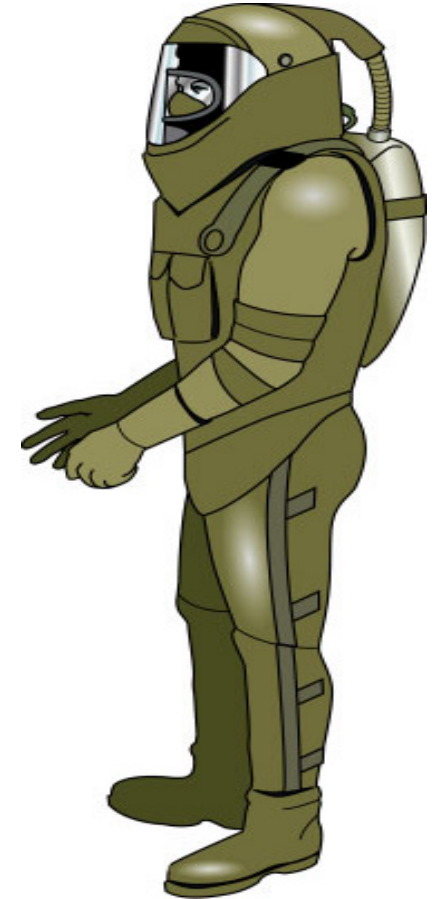
- Weight: reduced and improved distribution
- Blast Overpressure attenuation: Lungs and GI tract
- Improved impact protection for head
- Spinal cord Impact protection
- Compatibility with body cooling system and Soldier Intercom
- Increased fragmentation protection for the upper leg/groin, abdomen, chest, neck, and face



- ❖ Sponsors – NIJ Office for Science & Technology  
NIST – Office for Law Enforcement Standards (OLES)
- ❖ User Representatives – National Bomb Squad Commanders Advisory Board
- ❖ Technical – Natick Soldier Center/PM-Soldier Equipment/National Protection Center
- ❖ Improvised Explosive Device Threat Data – TSWG



# InterAgency Board for Equipment Standardization and Interoperability



Past – Present - Future



# InterAgency Board for Equipment Standardization and Interoperability

## Personal Protection & Operational Equipment Subgroup Supported Initiative

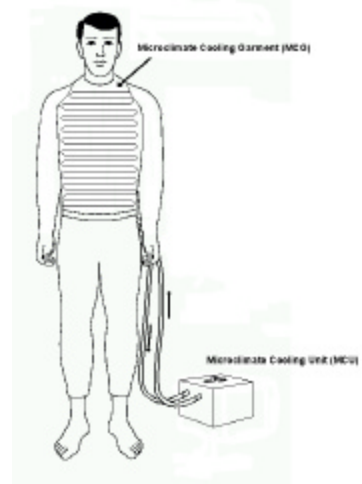
### Personal Cooling Systems Performance Criteria & Standard *Management of Heat Stress*

National Technology Transfer (NTTC) Center  
Emergency Response Technology Program  
(ERTP)

Natick Soldier Center  
Special Operations Forces Team  
National Protection Center

Navy Clothing & Textiles Research Facility

Memorial Institute for the Prevention of  
Terrorism (MIPT)



## **Major Issue with IAB and PP&OE Subgroup!!!**

### **Marketing and Sale of Non-Compliant Ensembles !!!**

**IAB is based on development and application of performance Criteria and federal/consensus standards**

**Concurrence and Support is Requested from OHS, FEMA/ONP/USFA, DOJ/NIJ and NIST-OLES**



**Recommendation: Federal Government Agencies  
Controlling WMD Grant Funding to  
Local/State Agencies Should Restrict  
Procurement to Certified Equipment Only!!**

**Recommendation: Federal Regulatory Agency Enforcement**





# InterAgency Board for Equipment Standardization and Interoperability

## Distribution and Use of Respiratory Protection Equipment By Civilians & Citizens

### **Relationship to InterAgency Board PP&OE Subgroup and the IAB Performance Criteria and Standards Development Program**

Complex Issues with Congress, FEMA, DOD, CDC & FEMA  
FEMA Representative as Guest Participant at Subgroup Meeting

Subgroup Recommendations:

- 1) IAB efforts are structured for emergency responders
- 2) Other Federal Agencies must address civilian applications



**<http://hld.sbccom.army.mil>**



**Example Documents:**

- **Equipment Performance Reports – Clothing, Masks, Detectors**
- **Guidelines for Cold Weather Mass Decontamination**
- **Evaluation of Firefighter PPE for Chem/Bio Incident Rescue**
- **Guidelines for Mass Fatality Management Involving Chem Agents**
- **Chem Protective Clothing for Law Enforcement**
- **Concept for Off-Site Triage, Treatment and Transportation Center**



# InterAgency Board for Equipment Standardization and Interoperability



Domestic Warriors - Partners In Protecting the Homeland!  
IAB is the Gateway to that Partnership!